

REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-4 are pending in the present application. No claims have been amended, canceled, or added by the present response.

In the outstanding Office Action, Claim 1 was rejected under 35 U.S.C. § 102(b) as anticipated by Chiasson et al. (U.S. Patent No. 5,546,429, herein "Chiasson"); Claim 3 was rejected under 35 U.S.C. § 102(e) as anticipated by Liu (U.S. Patent No. 6,137,824); Claim 4 was rejected under 35 U.S.C. § 102(b) as anticipated by Okanoue et al. (U.S. Patent No. 5,701,333, herein "Okanoue"); and Claim 2 was allowed.

Applicant thanks the Examiner for the indication of allowable subject matter.

The rejection of Claim 1 under 35 U.S.C. § 102(b) as anticipated by Chiasson is respectfully traversed for the following reasons.

Briefly recapitulating, independent Claim 1 is directed to a radio communication receiver including, *inter alia*, A/D converters in number of P and P soft-decision output equalizers, where P is a natural number more than one. Each soft-decision output equalizer makes a soft-decision on a digital signal output by a corresponding A/D converter. In a non-limiting example, Figure 1 shows the A/D converters 4a and 4b and the corresponding soft-decision output equalizers 11a and 11b.

Turning to the applied art, Chiasson shows in Figure 1 a radio communication unit having filters 142 and 144, down converters 150 and 152, filter/limiters 158 and 160, correlation channels sounding symbol rate sample units 166 and 168, and a soft-decision weighting unit 174. The outstanding Office Action asserts at page 3, numbered paragraph 2, that the single soft-decision weighting unit 174 corresponds to claimed P soft-decision output

equalizers because the soft-decision weighting unit 174 performs a function equivalent to the claimed soft-decision output equalizers.

However, Applicant notes that Claim 1 recites **plural** soft-decision output equalizers, i.e., P output equalizers, and each equalizer makes a decision on a signal received from a corresponding A/D converter of the plural A/D converters. On the contrary, Figure 1 of Chiasson shows a **single** soft-decision weighting unit 174 that receives signals from all filter/limiters 158 and 160. Assuming arguendo that the unit 174 of Chiasson has the same function as the claimed P equalizers, Applicant respectfully submits that the claimed structure is different from the structure disclosed by Chiasson irrespective of the function performed.

Further, it is noted that MPEP 706.02 IV states that “the reference must teach every aspect of the claimed invention.” Thus, Applicant respectfully submits that the assertion of the outstanding Office Action that the single soft-decision weighting unit 174 of Chiasson corresponds to the claimed plural soft-decision output equalizers is improper because not every aspect of the claimed invention is shown by Chiasson.

The outstanding Office Action states at page 2 in the Response to Arguments section that “Examiner agrees that there is one soft decision block shown in Chiasson’s disclosure” but that block “provides equivalent functionality” to the claimed P equalizers. Applicant respectfully submits that considering only the functionality of the claimed structure (P equalizers) as suggested by the outstanding Office Action is not consistent with the MPEP requirements, which state that “every element” of the claimed invention need to be found in a reference for a proper anticipation rejection.

In addition, the outstanding Office Action asserts that Chiasson stipulates the combining of equalized diversity signals (see column 6, lines 51-59), which is interpreted by the outstanding Office Action as equivalent to summing multiple values to produce a single

result.¹ However, Chiasson only discloses in column 6, lines 51-59, that the equalizer 198 combines inputs 194 and 196 from each branch as well as output 186 of the diversity combiner 184. However, the inputs 194 and 196 from each branch are not the results of the soft decisions, but are the output from the correlator 166, 168.² Therefore, Applicant respectfully submits that Chiasson does not teach or suggest a combining unit which sums up the results of the soft decisions by the soft-decision output equalizers and outputs the result as a soft-decision value as required by Claim 1.

Accordingly, it is respectfully submitted that independent Claim 1 patentably distinguishes over Chiasson.

The rejection of Claim 3 under 35 U.S.C. § 102(e) as anticipated by Liu is respectfully traversed for the following reasons.

Independent Claim 3 is directed to a radio communication receiver that includes, *inter alia*, a combining unit which divides results of soft-decisions by noise power respectively, and combines the results of the division to output a soft-decision value. In a non-limiting example, Figure 3 shows the combining section 32 receiving signals from noise power estimation sections 31a and 31b and also from the soft-decision output equalizers 11a and 11b. Further, Applicant notes that the combining unit 32 **divides** soft-decision results by corresponding noise power.

Turning to the applied art, Liu shows in Figure 3 a receiver having a signal post-processing unit 308. However, Liu does not teach or suggest that the post-processing unit 308 shown in Figure 3 **divides** results of the soft-decision by corresponding noise power as required by Claim 3. The outstanding Office Action asserts at page 4, last three lines of the first paragraph that Liu discloses at column 9, lines 51-54 a combining unit that divides the

¹ Outstanding Office Action, page 2, second paragraph.

² Chiasson, column 4, lines 21-27.

results of the soft-decisions by corresponding noise power. However, Liu discloses at column 9, lines 51-54, only that “the signals of the different branches 3 and 4 may advantageously be combined as in prior art in the diversity combining means of the post-processing means 308.” Thus, Liu does not teach or suggest that the combining unit divides a result of the soft-decisions by a corresponding noise power. Therefore, the assertion of the outstanding Office Action that Liu discloses the features of Claim 3 does not have any basis.

Accordingly, it is respectfully submitted that independent Claim 3 patentably distinguishes over Liu.

The rejection of Claim 4 under 35 U.S.C. § 102(b) as anticipated by Okanoue is respectfully traversed for the following reasons.

Independent Claim 4 is directed to a radio communication receiver that includes, *inter alia*, P analog signal generating units and an error correcting unit. Each analog signal generating unit receives a signal and generates a base band analog signal from a received signal. The error correcting unit generates a reliability information of decoded bits and feeds back the reliability information to soft-decision output equalizers. In a non-limiting example, Figure 4 shows the error correcting unit 43 and Figure 1 shows the analog signal generating units 3a and 3b.

The outstanding Office Action asserts that Okanoue shows in Figure 3 a sampler 56 that corresponds to the claimed analog signal generating unit. However, Applicant respectfully submits that the sampler 56 of Okanoue is known to the artisan to sample an analog signal from the antenna 51 and to produce digital information but not to generate a base band analog signal as required by Claim 4.

Further, the outstanding Office Action asserts that Okanoue discloses a feed back loop from a Viterbi decoder via the synchronization establishing circuit for control of a channel estimation utilizing a decision signal from the Viterbi decoder. However, Applicant

respectfully submits that the feedback loop identified by the outstanding Office Action in Okanoue is not similar to the claimed device as will be discussed next.

The outstanding Office Action suggests the following correspondence between the claimed elements of Claim 4 and the device of Okanoue:

the claimed soft-decision output equalizers in number P (asserted to correspond to the first through fourth branch metric calculation circuits 66 to 69 of Okanoue) each of which makes a soft decision on the digital signal (asserted to correspond to the first and second sampled signal sequences in Okanoue) output by the corresponding A/D converter based on common reliability information (asserted to correspond to the decision signal or the synchronizing signal of Okanoue) that is fed back after error correction;

the claimed combining unit (asserted to correspond to the branch metric combining circuit 71 in Okanoue) which combines the results of the soft decisions by the soft-decision output equalizers (asserted to correspond to the first through the fourth branch metrics in Okanoue) and outputs the result as a soft-decision value (asserted to correspond to the combined branch metric in Okanoue); and

the claimed error correction unit (asserted to correspond to the Viterbi processor 72 in Okanoue) which performs error correction processing (asserted to correspond to the maximum likelihood sequence estimation in Okanoue) with respect to the soft-decision value output by the combining unit, generates reliability information of decoded bits, and feeds back the reliability information to the soft-decision equalizers.

However, assuming arguendo that the above noted correspondences are accurate, Applicant respectfully submits that one of ordinary skill in the art, based only on Okanoue, would not be able to conclude that the claimed results of the soft decisions are the same as the first through the fourth branch metrics of Okanoue, or that the claimed common reliability information is the same as the decision signal or the synchronizing signal in Okanoue.

Accordingly, it is respectfully submitted that independent Claim 4 patentably distinguishes over Okanoue.

Consequently, in light of the above discussion, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Eckhard H. Kuesters
Attorney of Record
Registration No. 28,870
Remus F. Fetea, Ph.D.
Limited Recognition No. L0037

Customer Number

22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)
EHK:RFF\dt\ys
I:\ATTY\RFF\22850\220353\220353US-RR-060706.DOC